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| 09/176,124      | 10/21/1998  | GERHARD SCHNEIDER    | 10191/857           | 7808             |

26646 7590 09/16/2004

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| EXAMINER |
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OLSEN, KAJ K

| ART UNIT | PAPER NUMBER |
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1753

DATE MAILED: 09/16/2004

39

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/176,124

Applicant(s)

SCHNEIDER ET AL.

Examiner

Kaj K Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-9 and 11-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Suzuki et al (USP 4,718,999). Suzuki is being cited for the first time with this office action.

3. Suzuki discloses a planar sensor element comprising a layer structure including a measuring cell (electrodes 123, 124 and the portion of electrolyte between the two electrodes) and a heating element 122 embedded in a layer plane of a layer structure (e.g. see fig. 9 and 11). With respect to the covering layer, the lowermost portion of electrolyte 120 in fig. 11 (i.e. the electrolyte below elements 126, 129 and 131) would read on the claimed “covering layer” giving the claim language its broadest reasonable interpretation. In particular, that portion of electrolyte 120 is covering electrode 126 and chamber 129. Said covering layer is not functioning as part of an oxygen pump or oxygen concentration cell. With respect to the layer plane being centered, Suzuki discloses that the heater should be in the center of the sensor element (col. 8, lines 8-15).

4. With respect to claims 3 and 4, the determination of patentability for the claim is based on the product itself. Because the product of the claim is identical to the invention of Suzuki the process from which it was made is the same as or obvious over the process utilized by Suzuki

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(see *In re Thorpe*, 777 F.2d 695, 698). See also pp. 7 and 8 of the Appeal Decision (paper no. 35), which affirmed said interpretation of the claim. In addition, see also col. 8, lines 44-60 of Suzuki where it describes that the sensor element shown in the figures is constructed as a laminate of a series of layers.

5. With respect to claim 5, Suzuki shows the heater 122 embedded in an insulating layer 121. See fig. 9 and col. 8, lines 8-10. Although Suzuki never explicitly discloses that the heater is embedded within two layers of 121, whether or not the heater were embedded in two layers (as opposed to any other means that would allow the heater to be so embedded within the insulating material) would appear to be irrelevant by the fact that the sensors of Suzuki and the instant invention are sintered after construction (col. 8, lines 44-60). Because the two layers of the instant invention are part of the sensor construction and that sensor is eventually sintered (see p. 4, lines 13-35), the final product of the heater of Suzuki would appear to be analogous to the final product of the instant invention and the process from which it was made is the same as or obvious over the process utilized by Suzuki. With respect to the two layers each having a thickness "approximately equal" to the other, the layers themselves are part of the process for making the device. Moreover, Suzuki shows the heater element being approximately centered within the insulating layers (see the figures).

6. With respect to the sealing frame, Suzuki shows electrolyte being placed about the heater assembly (see any of the sensor figures).

7. With respect to new claim 8, because the heater of Suzuki is disclosed as being in the center of a sensor constructed almost entirely of electrolyte 120 (see rejection above), Suzuki would inherently possess the claimed homogeneous heat distribution.

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8. With respect to the covering layer being an entirety of the planar sensor element or contacting a second opposing planar surface of the heating element, see fig. 13-16, which are further modifications of the embodiment of fig. 9.

9. With respect to new claims 13 and 14, these various limitations were already addressed in the preceding rejection and will not be reiterated here.

10. Claims 1, 3-8, 10, 13, and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamada (USP 4,505,807).

11. These claim limitations were previously rejected over the teaching of Yamada '807, which the Board affirmed. Upon amendment, applicant has amended that the covering layer "does not form part of an oxygen pump cell or an oxygen concentration cell", which would not read on the previous element that was construed as being the covering layer. However, lugs 4 and 5 (see fig. 1 and 3 and col. 5, lines 48-61) would read on the broadly defined "covering layer" because they are in fact covering a portion of the sensor element and leads of some of the electrodes. Because lugs 4 and 5, are not part of an oxygen pump cell or an oxygen concentration cell, this covering layer would thereby meet the claim limitations and the amended claims are still not free of the prior teaching of Yamada '807.

12. With respect to the newly defined covering layer being made of zirconium oxide, Yamada does not define what the lugs 4 and 5 should be constructed out of. However, because the lugs are being utilized as part of the unitary green body to be sintered (col. 5, lines 48-61), one possessing ordinary skill in the art would have been motivated to utilize the same material as was utilized for elements 1c and 2c (i.e. zirconium electrolyte) in order to ensure that the lugs shrink at the same rate and the electrolyte materials in order to prevent cracking of the sensor.

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13. Claims 1, 3-9, 11, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mase et al (USP 4,769,123). Mase is being cited and relied on for the first time with this office action.

14. Mase discloses a planar sensor element comprising a measuring cell layer (16, 18) a covering layer (46 or 74) and a heating element 62 disposed between the measuring cell layer and the covering layer in the form of a layer plane 60. See fig. 1 and 3 and col. 6, lines 36-52. Furthermore, because the various layers of the sensor elements are shown stacked on top of each other and in line with each other, all the various elements of the sensor (including the layer plane) would read on “at least approximately centered” giving the claim language its broadest reasonable interpretation. Although this isn’t “centered” in the sense that the applicant has disclosed the centering (namely centered with respect to the vertical layers), it reads on the claimed term.

15. With respect to claims 3 and 4, the determination of patentability for the claim is based on the product itself. Because the product of the claim is identical to the invention of Mase the process from which it was made is the same as or obvious over the process utilized by Mase (see *In re Thorpe*, 777 F.2d 695, 698). Moreover, Mase discloses a plurality of electrolyte elements 20 and 22.

16. With respect to claims 5-7, Mase teaches the use of two insulating layers 64 and 66. Moreover, fig. 2 shows those two layers to be of the same approximate thickness.

17. With respect to claim 8, because the applicant does not define the metes and bounds of “approximately homogeneous distribution of heater power”, presumably Mase satisfies some reasonable interpretation of a homogeneous distribution of heater power. Although Mase might

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not provide the homogeneous distribution that would have been provided by the instant invention, the examiner sees nothing inherent in the term "homogeneous distribution of power" that would read free of the teaching of Mase.

18. With respect to claims 9 and 11, see fig. 1 and 3.

19. With respect to claims 13 and 14, these various limitations were already addressed above and will not be reiterated here.

***Claim Rejections - 35 USC § 103***

20. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

21. Claims 5-7 in the alternative are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Suzuki, Yamada '807 or Mase in view of Kato et al (USP 5,879,525).

22. In the above rejections, the examiner treated the various limitations of claim 5 as being part of the process of making, which would have been the same or obvious over the process of the above references. However, even if the examiner were to give weight to the use of two insulating layers of approximately equal thickness, this is well known in the art. In particular, Kato discloses a heater assembly where the heater conductor is sandwiched between two equally thick insulating layers. See col. 14, lines 57-64. It would have been obvious to one of ordinary skill in the art at the time the invention was being made for Suzuki, Yamada '807 or Mase to utilize the process of Kato for constructing the heater layer plane because the use of green films or tapes for heater construction is well-known in the art and requires only routine skill.

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23. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Suzuki or Mase in view of Yamada '807.

24. Suzuki and Mase set forth all the limitations of the claim, but did not explicitly recite the use of stabilized zirconium oxide as the choice of zirconium oxide. Yamada '807 already set forth the desirability of utilizing the stabilized form of zirconia as the zirconia material for the sensor. See col. 4, lines 27-38. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Yamada '807 for the sensors of either Suzuki and Mase because, as the term "stabilized" implies, this is a more stable form of zirconia to work with.

#### ***Response to Arguments***

25. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 5:30 A.M. to 3:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753  
September 14, 2004



**KAJ K. OLSEN**  
**PRIMARY EXAMINER**